Patent Claims

1. A cell which secretes enantiomerically pure R-α-lipoic acid into a culture medium, characterized in that it possesses a lipoyl protein ligase B activity which is elevated as compared with that of a wild-type strain and, at the same time, exhibits a concentration of a lipoylatable polypeptide which is elevated as compared with that of the wild-type strain.

2. A cell as claimed in claim 1, characterized in that it is a microorganism, for example a yeast strain or a bacterial strain.

3. A cell as claimed in claim 2, characterized in that it is a bacterial strain from the Enterobacteriaceae family, preferably a strain of the species *Escherichia coli*.

4. A cell as claimed in one of claims 1 to 3, characterized in that the lipoyl protein ligase B activity is increased by at least a factor of 2.

5. A cell as claimed in one of claims 1 to 4, characterized in that the concentration of the lipoylatable polypeptide is increased at least by a factor of 2.

6. A plasmid, characterized in that it contains both a *lipB* gene and a gene for a lipoylatable polypeptide.

7. A plasmid as claimed in claim 6, characterized in that it carries a *lipB* gene and also a gene which encodes a lipoylatable polypeptide, in each case under the control of a promoter.

8. A method for preparing a cell as claimed in claims 1 to 5, characterized in that a plasmid which contains a *lipB* gene and a plasmid which contains a gene for a lipoylatable polypeptide, or a plasmid as claimed in claim 6 or 7, is/are introduced into a starting cell.

9. A method for fermentatively preparing enantiomerically pure R-α-lipoic acid, characterized in that a cell as claimed in one of claims 1 to 3 is cultured in a culture medium, with the cell secreting enantiomerically pure R-α-lipoic acid into the culture medium and the enantiomerically pure R-α-lipoic acid being separated off from the culture medium.

10. The method as claimed in claim 9, characterized in that the cells are cultured in a minimal salt medium, with aspartic acid, malic acid, succinic acid, pyruvic acid, fumaric acid, glutamic acid, glucose, glycerol or oxaloacetic acid being used as the carbon source and fatty acids having a chain length of C2-C8, preferably having a chain length of C6-C8 (hexanoic acid or octanoic acid), being added to the medium as specific precursors for the α-lipoic acid synthesis.